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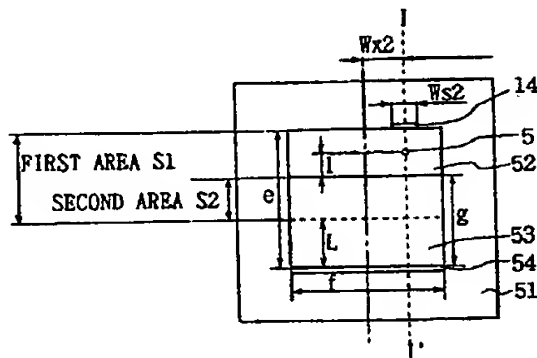
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**(54) Antenna device**

(57) An antenna device according to the present invention comprises a flat ground conductor; a first flat radiation conductor disposed against the flat ground conductor interposing a first dielectric layer; a first short-circuit conductor connecting an end of the first flat radiation conductor and the flat ground conductor; a second flat radiation conductor disposed partly against an opposite side of the first flat radiation conductor to its other side facing the ground conductor interposing a second die-

lectric layer; a second short-circuit conductor connecting an end of the second flat radiation conductor and the flat ground conductor; and a supply point disposed on the first flat radiation conductor. With this structure, the first flat radiation conductor and the second flat radiation conductor are disposed partly against each other. Which enables more size reduction than that of conventional antennas in operating at the same resonant frequency with a conventional antenna.

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**FIG. 5A****EP 0 980 113 A3**

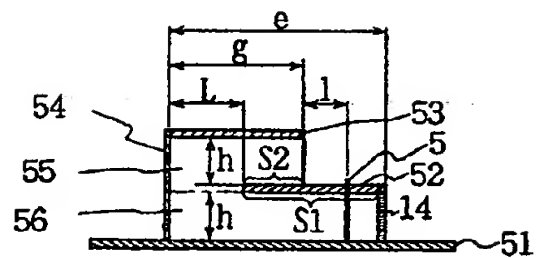


FIG. 5B



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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 6272

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 749 996 A (TRESSELT CARL P) 7 June 1988 (1988-06-07) * column 3, line 3 - line 45 * * column 4, line 38 - line 49; figures 2-4	1-4	H01Q9/04 H01Q19/00 H01Q1/24
A	<p>---</p> <p>KYRIACOU G A ET AL: "ANALYSIS OF A PROBE-FED SHORT-CIRCUITED MICROSTRIP ANTENNA"</p> <p>IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, US, IEEE INC. NEW YORK, vol. 45, no. 3, 1 August 1996 (1996-08-01), pages 427-430, XP000632288</p> <p>ISSN: 0018-9545</p> <p>* page 427, left-hand column, paragraph 1; figure 1 *</p> <p>-----</p>	2,3	
			<p>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</p> <p>H01Q</p>
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>13 December 2000</b>	Examiner <b>Moumen, A</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 30 6272

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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13-12-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4749996 A	07-06-1988	US 4575725 A	11-03-1986
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